

NOTES ON THE LECYTHIDACEAE OF PANAMA

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In 1958 Woodson (in Woodson & Schery, Ann. Missouri Bot. Gard. **45**: 115-136. 1958) published a treatment of the *Lecythidaceae* for the Flora of Panama. This included six genera and approximately 14 species. As the genus *Couroupita* Aubl. is treated only cursorily, it is difficult to state categorically how many species Woodson considered to be present on the Isthmus. As less than 75 collections are cited for the six genera, with almost half of these collections being assigned to *Gustavia superba* (H.B.K.) Berg., it is obvious that additional collections of Panamanian *Lecythidaceae* are highly desirable. In commenting on the material of *Couroupita* available for examination, Woodson remarked (loc. cit., p. 127): "An adequate herbarium representation of *Couroupita* is one of the outstanding desiderata for a complete flora of Panama." As a result of the field work of Chambers, Duke, Dwyer, Ebinger, A. Robyns, Sexton, and Stern sporadically in Panama during the past seven years, some 34 new collections of the family are available for study, including three collections of *Couroupita*, all but five of these having been collected east of the Canal Zone, especially in the Province of Darien which borders Colombia.

The numerical arrangement of genera and species followed by Woodson will be adopted as far as is practical in this paper. All collections cited are deposited in the herbarium of the Missouri Botanical Garden. The citation "*Stern et al.*" refers to the collections of Stern, Chambers, Dwyer and Ebinger made in 1959.

1. GUSTAVIA L.

1. *Gustavia nana* Pittier, Contr. U.S. Nat. Herb. **26**: 5, pl. 2-4, 1927; Woodson in Woodson & Schery, Ann. Missouri Bot. Gard. **45**: 120. 1958.

DARIEN: Campamento Buena Vista, Río Chucunaque above confluence with Río Tuquesa, *Stern et al.* 928; Cativo Swamp, El Real, *Duke* 4825; Río Canelon, *Sexton* 212; sine sp loc, *Sexton* 101 A.

The fruit of *Duke* 4825, though immature, illustrates well the very broad opercular region characterizing *G. nana*.

2. *Gustavia superba* (H.B.K.) Berg, *Linnaea* **27**: 444. 1856.

CANAL ZONE: Madden Dam, *Dwyer* & A. *Robyns* 13; *Stern et al.* 47. DARIEN: Río Canelon, *Sexton* 256; vic El Real, 1 mi down from Pinogana, *Stern et al.* 112; Paya & Pucro, *Stern et al.* 406. PANAMA: Isla de Pedro Gonzales, *Dwyer* 1690; Isla Tabaguilla, *Duke* 5887.

I observed this species in full flower at Fort Sherman on the Atlantic side of the Canal Zone in April, although no collection was made. In July, 1962, Duke collected near Yaviza in the Province of Darien a fruiting specimen of *G. superba*, with lanceolate leaves, measuring up to 70 cm in length and 10 cm wide, and puberulent beneath. The foliage matches that of *Stern et al.* 410 collected earlier at Paya in Darien. The immature fruit, measuring up to 7 cm in diameter, seems typical for

the species despite the fact that the surface is rougher and pustulate. As puberulent leaves have not been reported for *G. superba*, I am describing the new variety *puberula*.

Gustavia superba var. **puberula** Dwyer, var. nov.

A var typica foliis distincte infra puberulis differt.

DARIEN: below Yaviza, Río Chucunaque, *Duke* 4881 (MO, holotype); Paya, Río Paya, *Stern et al.* 410.

2. GRIAS L.

1. *Grias pittieri* Kunth in Engl., *Pflanzenreich* **IV** 219 2 (Heft 105): 29. 1939; Woodson in Woodson & Schery, *Ann. Missouri Bot. Gard.* **45**: 122. 1958.—Fig. 1.

DARIEN: Comarca del Barú, Puerto Armuelles, between Cañazo & Cocos, *Stern & Chambers* 141.

The leaves of this collection appear to be consistently short-auriculate at the base. An Allen collection, 5216, from the nearby Golfo Dulce area in Costa Rica,



Fig. 1. *Gustavia pittieri*. A. fruits: upper, internal view showing seeds, lower, external view, ca $\times 1/2$; right, external view showing calycine ring, ca $\times 1$. From *Stern et al.* 410.

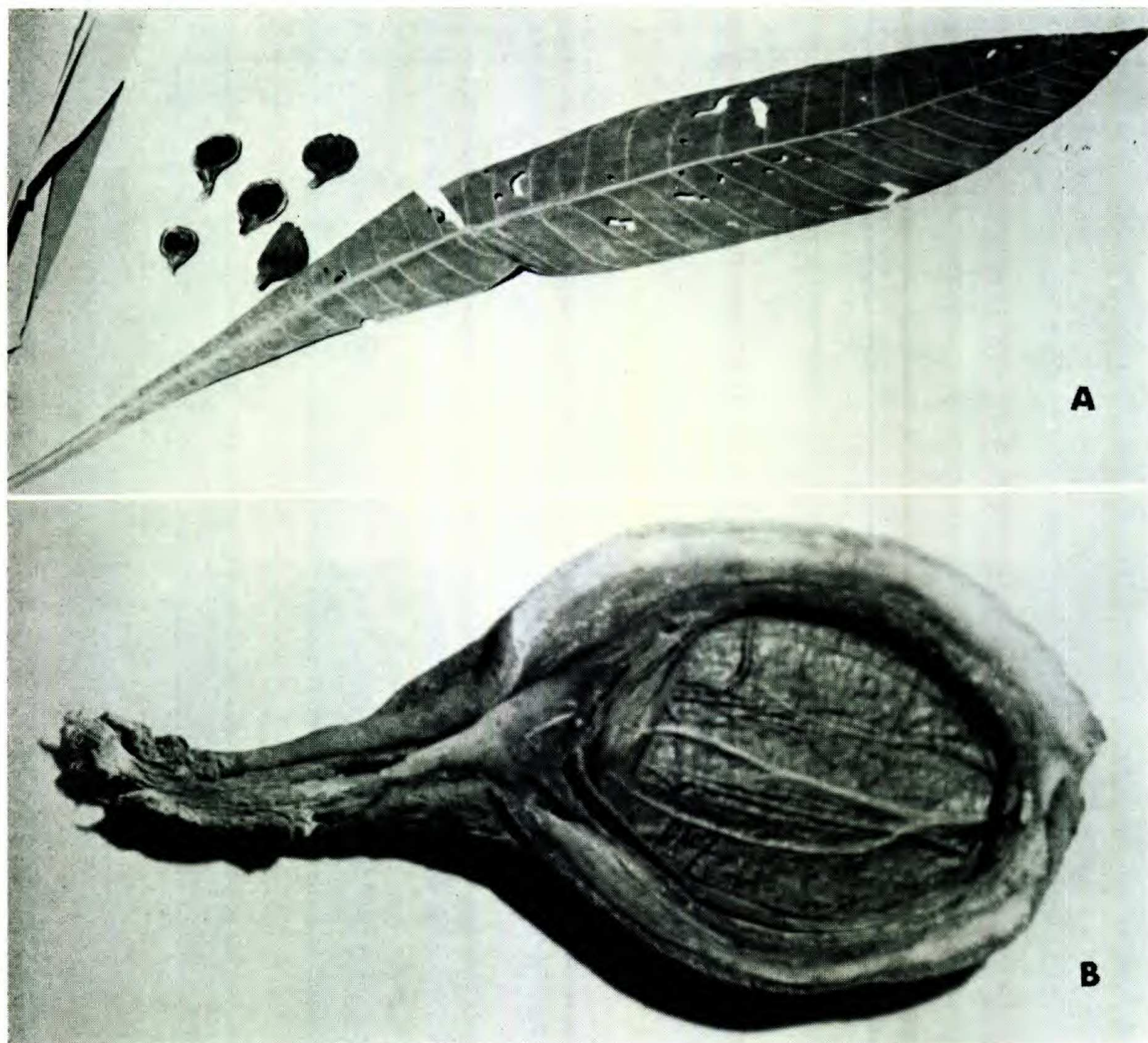


Fig. 2. *Grias dariensis* (holotype). A. leaf with fruit, ca $\times 1/8$; B. fruit, internal view, ca $\times 1 1/4$.

deposited in the herbarium of the Missouri Botanical Garden, shows the lamina with more obvious auricles.

2. *Grias dariensis* Dwyer, sp. nov.—Fig. 2.

Arbores parvae ad 11 m altae; folia lanceolata hic ad 65 cm longa, ad 12.5 cm lata, acutissima magne ad basim attenuata sessilia, costa supra ad apicem prominula, ad basim subplana latioreque venis secundariis prominulis ± 40 angulo 70° ascendentibus rectis ultime bifurcatis cir 5-10 mm proxime margines eis mediis 20-25 mm distantibus, lamina coriacea nitida glabra venis intermediis evanescentibus; fructus caulini diffusi obpyriformes vel oblongi, ad 3.5 cm longi, circ 2 cm lati, apice truncati annulo calycino apicale ad 3 mm alto margine tenue exocarpio in sicco paucis granulatis pustulis ornato brunneo vix ruguloso, pericarpio ad 1 mm lato semine fortasse solitario plano-convexo integre loculum complente, pedicello ad 10 mm longo, ad 7 mm lato, lignoso.

DARIEN: El Real, *Stern et al.* 119 (MO, holotype)

The new species is, like *G. sternii*, distinguished from *G. fendleri* and *G. pittieri*

by its very acute lanceolate leaves. While its fruits fall in the same general size range of those of *G. pittieri*, they are slightly larger with the calycine ring more distinct and the pedicels considerably shorter.

3. *Grias sternii* Dwyer, sp. nov.

Arbores parvae ad 35 m altae; folia apice fascicularia lanceolata, ad 1 m longa, ad 13 cm lata, acutissima sessilia lamina magne attenuata ad basim vix cordata, costa supra prominula sed proximaliter planiore prominente intra (ad basim praecipue) ad apicem evanescente venis secundariis ± 40 angulo 50° ascendentibus rectis eis mediis 15-22 mm distantibus ultime circ 5 mm proxime marginem bifurcatis sic undulatam venam submarginalem formantibus, lamina coriacea nitida glabra marginibus regularibus; flores non visi; fructus caulini diffusi oblongi, ad 5 cm longi, ad 3.3 cm lati, truncati certe biloculares (ovario prime quadriloculato) septo tenui, pericarpio ad 3.5 mm crasso coriaceo leviter rugoso in sicco brunneo minute crustuloso annulo calycino apicale circ 12 mm diametro vix prominulo. endocarpio chartaceo laeve subincarnato diversicolore gracile, pedicello ad 1.5 cm longo, 0.5 cm lato, coriaceo, seminibus hic oblongis, ad 3 cm longis, 1.2 cm latis, arillo ornatis.

DARIEN: El Real, Río Tuira, *Stern et al.* 772 (MO, holotype).

The new species, named in honor of William Stern of the Smithsonian Institution, is readily distinguished from *G. fendleri* and *G. pittieri* by its very acute and lanceolate leaves. The fruits, noted in the field as "immature" are almost twice as elongate as those of *G. pittieri* and are borne on much longer pedicels. Unlike the newly described *G. dariensis*, *G. sternii* has a larger fruit with a much thicker wall and a vague opercular ring. Whether the fact that the fruits of *G. sternii* are crustulose while those of *G. dariensis* are pustulate is of any significance, additional collections will determine.

4. *Grias megacarpa* Dwyer, sp. nov.—Fig. 3.

Arbores ad 45 m altae; folia oblanceolata ad 32 cm longa, ad 11 cm lata, acuta ad basim cuneata, petiolis ad 4 cm longis, ad 0.2 cm latis supra planis infra convexis puberulis, costa supra prominente acutaque infra prominente venis secundariis ± 20 rectis angulo 45° ascendentibus ad margines curvantibus venis tertiis patentibus prominulis angulo recto secundariis venis dispositis, lamina chartacea supra glabra infra diffuse pubescente; flores non visi; fructus turgidi ovato-elliptici, ad 11 cm longi, ad 6 cm lati, ad apicem cuneati ultime obtusi basi obtusi, annulo calycino nullo vel fortasse paucis irregularibus sed uniseriatis punctis notato, eis circ. 1.5 cm apice distantibus, pariete pericarpium ad 1 mm crasso, pulpo in sicco rubro, semine solitario.

DARIEN: confluence of Río Chucunaque & Río Canclones, *Duke* 5122 (MO, holotype).

I am placing this species in the genus *Grias* provisionally, although I feel that flowering collections will substantiate my suspicion that it is a new genus. The leaves are remarkably like those of the couroupitas, although the fruit of the new taxon is obviously not of the cannon-ball type so characteristic of *Couroupita*.



Fig. 3. *Grias megacarpa* (holotype). A. foliage and fruit, $\times\frac{1}{2}$; B. fruit, internal view showing single seed, $\times 2\frac{1}{2}$.

The fruit, while possessing a pulp which not only dries like that of the *grias* but matches it histologically, is extraordinarily large for a *Grias* (compare Fig. 3 with Fig. 4) and lacks any distinct vestige of the calyx. The mimeographed field notes of Duke list 5122 as *Pouteria carpechiana* (H.B.K) Bachm. (*Sapotaceae*) and the fruit

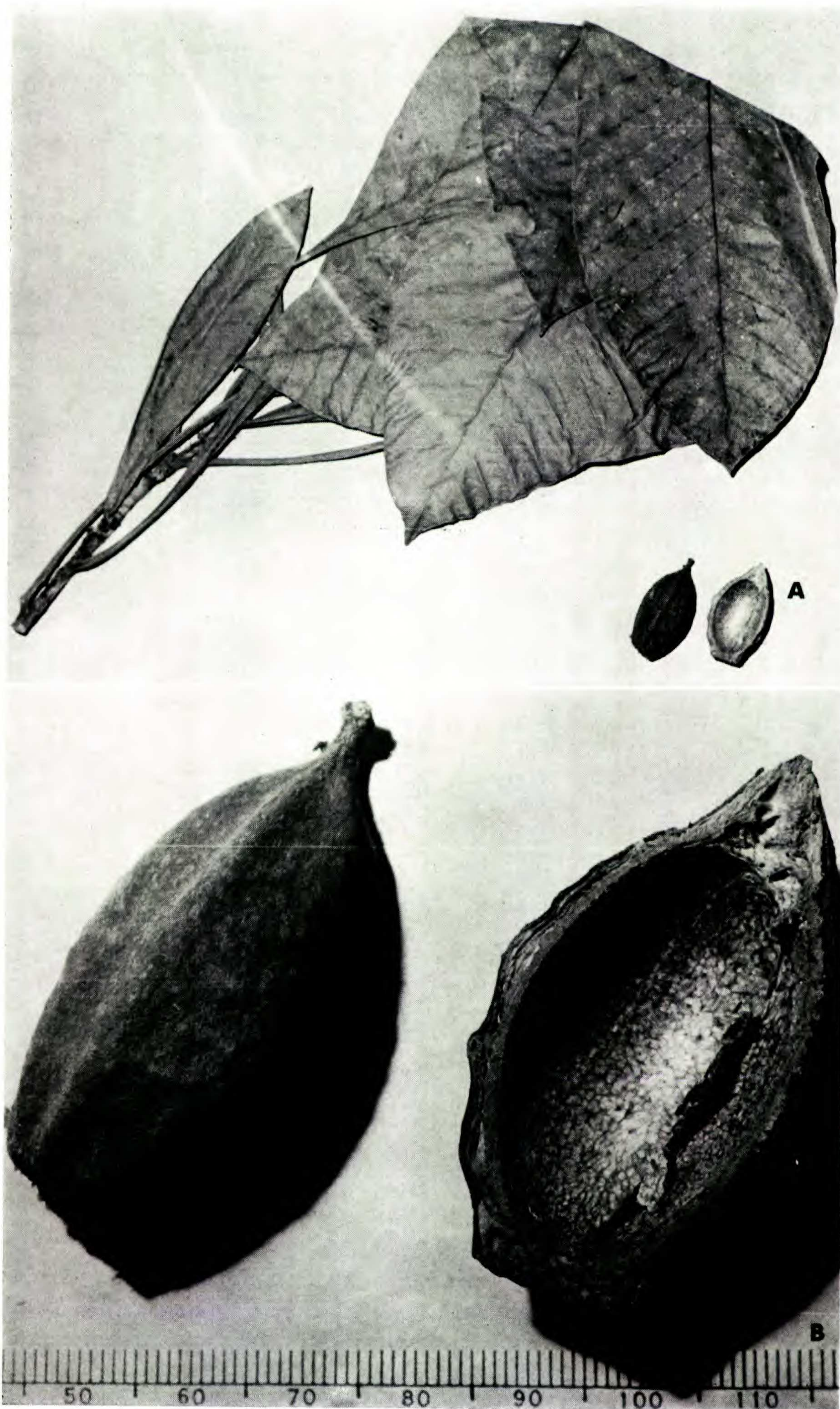


Fig. 4. *Grias dukei* (holotype). A. foliage and fruits, $\times\frac{1}{4}$; B. fruits: left, external view; right, internal view, $\times 1.7$.

is described as edible. While the foliage of *P. carpechiana* bears a striking resemblance in form and texture (but not typically in size) to the new taxon, nevertheless the fruits are obviously different.

5. *Grias dukei* Dwyer, sp. nov.—Fig. 4.

Arbores ad 10 m altae; ramuli teretes; folia sessilia (maiora pseudopetiolata) apice ramulorum modeste crebra, 0.5-2 cm distantia, laminis maioribus hic oblanceolatis, ad 65 cm longis, ad 14 cm latis, minoribus distincte lanceolatis acutisque, costa supra plano-convexa ad 2 mm lata, prominente infra praecipue ad basim ca maiorum foliorum basaliter magne prominente in utroque latere alam angustam ad 5 mm. latam ferente, venis secundariis principalibus ± 25 prominulis angulo 50° ascendentibus juxta marginem bifurcatis venis intermediis evanescentibus, limina rigido-chartacea concolore fortasse glabra marginibus parvorum foliorum leviter revolutis; fructus caulini oblongi, ad 5 cm longi, ad 2.5 cm lati, apice truncati cicatrice operculi plano circulari ad 1.5 cm lato, percarpio lignoso, circ 3.5 mm crasso, exteriori vix costato rugulosoque in sicco brunneo sub amplificatore minute farinoso, endocarpio subincarnato (ovario prime quadriloculato) septo tenuiore, pedicellis ad 0.5 cm longis, ad 0.25 cm latis; semina non vidi.

DARIEN: Río Pirre, 2-5 mi above El Real, Duke 5090 (MO, holotype).

The oblanceolate shape of the larger leaves with their bases strongly attenuate as a slender wing on each side of the costa readily distinguishes *G. dukei*. The rela-

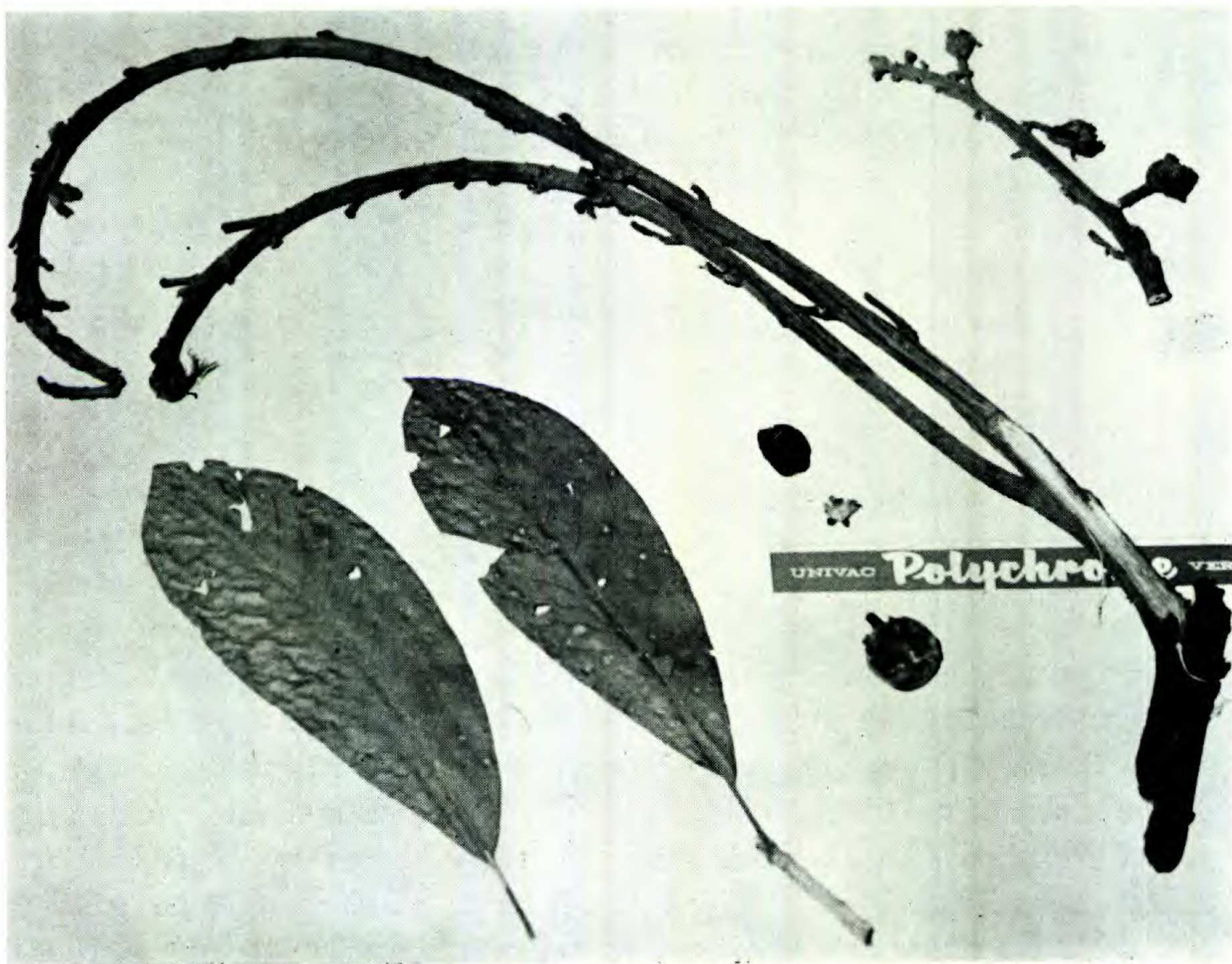


Fig. 5. *Couroupita idolica* (holotype): leaves, cauliflorous branches with buds, $\times 1/2$.

tively large and thick-walled fruit (5 cm long and 0.35 cm thick [wall]) matches that of the newly described *G. sterna* but is borne on much shorter and more slender pedicels. The fruits of *G. dukei* are farinose on the surface which may prove to be of some significance when more material is available. The new species is named in honor of James Duke of the New Crops Research Center, USDA, Beltsville, Maryland.

3. COUROUPITA Aubl.

1. *Couroupita idolica* Dwyer, sp. nov.—Fig. 5.

Arbores magne ad 35 m altae; ramuli laeves glabri cicatricibus petiolorum plerumque depresso-globosis ad 5 mm. latis vix conspicuis; folia obovato-oblonga et parum inaequilateralia, ad 22 cm longa, ad 8.5 cm lata, apice obtusa curvataque basi cuneata, costa supra angustiore vix prominula, infra prominenter convexa venis secundariis \pm 20 prominulis praecipue infra, angulo ascendentibus proxime margines bifurcatis ramulis arcuatis venis tertiis parum prominulis inconspicuis angulo recto venis secundariis dispositis, lamina chartacea hic in sicco subconcolore venis solum puberulis; flores 20-50 alternis in caulifloris ramulis, eis teretibus laevibus brunneis ad 25 cm longis, ad 7 mm latis, dispositi, pericellis ad 15 mm longis, crassis angularibus ascendentibus lignosis, aliquibus distantibus aliquibus geminis; flores lobis calycis sexibus oblongo-rotundis, ad 4 mm longis, ad 4 mm latis, in toto glabris crassis carnosisque; petala sexa fortasse inaequalia, 2.5-3 cm longa, 2-2.6 cm lata, concaviora; androphorum revolute cucullatum petaloideum, staminibus multis omnibus fertilibus, filamentis in inferiore parte inverse subulatis, 1.5-2 mm longis, apice 0.5 mm latis, antheris sessilibus circ 0.6 mm longis, circ 1 mm latis, connectivo nullo, filamentis mediorum staminum crassosubulatis, ad 3.5 mm. longis, apice ad 0.65 mm latis, antheris rotundis, ad 1 cm longis, circ 0.8 mm latis; filamentis distalibus in fasciculis 2-5 antheriferis; jugatis, ad 8 mm longis, pars ovarii supra calycem operculata, circ 3 mm longa, circ 7 mm lata, stylo nullo, stigmatibus jugatis cylindricisque ad 1 mm longis, ovulis multis in sexibus loculis dispositis; fructus non visi.

VERAGUAS: Río Trinidad, Río de Jesús, *Dwyer 1311* (MO, holotype), *Restrepo s.n.* (MO).

In July 1961 I rode by horse from the village of Río de Jesús (Veraguas) to the Río Trinidad to collect material of the famous idol tree. I had learned of this tree from the padres of the church at Santiago (Prov Veraguas). After an hour and a half ride the guide pointed to a tree of about 100 feet, majestically dominating a patch of mesophytic forest. The most striking feature of the tree was not the short cauliflorous branches with withered flowers within reach of the machete but the fact that the shadowy base of the goliath was enclosed in a sheet metal fence. On a platform surrounding the foot of the tree stood a crucifix before which some plastic flowers had been placed. To this tree natives came from far and wide to worship during Easter Week. The crucifix, however, stood not as a memorial to this worship but rather as a stern warning against the rituals which were reputed to terminate in a bacchanalia.

For the flowers described above I wish to express my thanks to Prof. Roberto Restrepo of the Normal School in Santiago, Panama.

On the basis that Seeman collected the type of *Couroupita odoratissima* "in the forests of Río de Jesús, between Santiago and Puerto Mutis, Veraguas" one might expect that my taxon belongs here. However, Pittier, as Woodson points out (loc. cit., p. 127), "distinguishes *C. odoratissima* Seem. as a "low spreading savanna tree, branched almost from the base" . . . yet Seemann assigns a height of 60-80 feet to the type trees of *C. odoratissima*."

The two principal reasons for describing the material as a new species is that the flowers here are much larger than those reported for *C. odoratissima* and secondly that the distal filaments of the stamens are mostly fused into flat band-like antheriferous fascicles which appear in outline like the body of a foliose lichen. As far as I know this has not been reported for any Panamanian species of *Couroupita*.

The flowers of the new species are reddish in color. The common names for *C. idolica* are: "El Arbol de Granadillo" and "El Granadille de Las Huacas."

2. *Couroupita magnifica* Dwyer, sp. nov.

Arbore magnae ad 60 m altae; ramuli laeves in sicco longitudinaliter marcescentes glabri cicatricibus petiolorum oblongis vel subrotundis ad 5 mm latis notati; folia conspicue alternis satis distantia obovato-lanceolata, ad 20 cm longa, ad 8.0 cm lata, apice obtusa rare brevior latioreque acumine, basi attenuato-cuneata, lamina angustam alam in utroque latere petiolorum formante, costa supra proximaliter prominula acutaque distaliter angustiore, infra prominente, venis secundariis principalibus \pm 20 rectis angulo 45° ascendentibus ultime arcuatis bifurcatisque proxime margines, saepe mediam venam subparallelem inter jugum venarum ferentibus, venis tertiis supra vix conspicuis infra prominulis recto angulo venis secundariis dispositis, lamina subcoriacea glabra praeter basim venarum secundariarum; pedicelli 1-2 cm longi, supra plani infra subconvexi, ad 3.5 mm lati; flores hic circ 20 alterni in caulifloris ramulis dispositi, lobis calycis sexibus subrotundis, ad 6 mm longis, circ 6 mm latis, crassis carnosisque praecipue proximaliter glabris praeter margines minuto ciliatos exteriores rugis minutis ornatis; petala sexa suborbicularia, ad 12 mm longa, circ 10 mm lata, crassa laevia glabra praeter margines minute ciliolata; androphorum reflexo-cucullatum carnosum staminibus fortasse omnibus fertilibus creberrimis, filamentis staminum proximalium linearicylindricis, ad 2 mm longis, connectivo gracili circ 0.75 mm longo, antheris oblongo-rotundis circ 0.35 mm longis, filamentis staminum distalium liberis crassioribus brevioribusque, connectivo nullo; ovarium (hic fructus juvenilis?) turbinatum, circ 10 mm longum, ad 10 mm latum, pariete pericarpium circ 2 mm crasso quadriloculatum, exteriori verrucis circularibus vel substellatis, 0.7-1 mm latis ornato, endocarpio in sicco cyaneo, ovulis multis in placentis axillaribus affixis.

DARIEN: vic of Campamento Buena Vista, Río Chucunaque above confluence with Río Tuquesa, Stern *et al.* 930 (MO, holotype)

As the petals, persistent in the very young fruit, tend to remain closed, measur-

ing here about 12 mm in length, we can make a calculated guess that the flowers of the new species measure about 3 cm in diameter at anthesis. Thus the flowers of *C. magnifica* approximate those of *C. parviflora* Standley from Bocas del Toro, although Woodson (loc. cit., p. 127) observed that “. . . the flowers of the type specimen of *C. parviflora* obviously are not fully expanded. . . .” The new species is distinguished from *C. parviflora* by its alate petioles bearing blades which are occasionally acuminate at the apex. The sepals of *C. magnifica* are glabrous except marginally, and the petals unlike those of *C. parviflora* are ciliolate marginally and the anthers here measure only 0.35 mm in length.

4. LECYTHIS Loeffl.

1. *Lecythis tuyrana* Pittier. Contr. U. S. Nat. Herb. **26**: 9, pl. 7. 1927, Woodson in Woodson & Schery, Ann. Missouri Bot. Gard. **45**: 128, fig. 40. 1958.—Fig. 6, C, D.

DARIEN: vic of El Real, Río Tuira, foothills of Cerro Pirre, Don Pablo Othón's pasture, Stern *et al.* 738; vic of Campamento Buena Vista, Río Chucunaque above confluence with Río Tuquesa, Stern *et al.* 883.

The collection 738 is from a small tree 30 feet high, 8 inches in diameter with yellow flowers, while 883 is from a tree 150 feet high, 3 feet in diameter. The fruits collected from both trees (cf. Fig. 6) match well the one in Pittier's paper (loc. cit.) as well as the sketch in Woodson's paper (loc. cit.).

2. *Lecythis elata* Dwyer, sp. nov.—Fig. 6A, B.

Arbores ad 60 m altae; folia ut in *L. tuyrana* oblonga, ad 33 cm longa, ad 11.5 cm lata, abrupte acuminata basi obtusa brevi-auriculataque venis secundariis principalibus 20-30 rectis angulo 80° ascendentibus, lamina coriacea glabra, petiolis 0.5-1 cm longis, flores non visi; fructus urceolati, 7.5-9.0 cm longi (sine operculo), 10-11 cm lati, loculo 5.5-7.5 cm alto, zona calycina submedia saepe obliqua prominente plutoidea, 3-5 mm lata non erosa, zona infracalycina plus quam superiore contracta, zona supracalycina 3-5 cm longa, gradatim convexa vel rare subrecta labio convexo, ± 10 mm lato, parvis verrucis vel dentibus munito, exteriori lignoso brunneo sublaeve vel multis irregularibus magnisque tumoribus notato, ore pyxidii 5-7 cm in diametro, operculo ad 2.5 cm longo, ad 11 cm in diametro, margine late crenulato concavioque, parte superiore magnis irregularibus radialibus verrucosis vel foveatis tumoribus notata, umbone prominente ad 1.2 cm longo, ad 2.5 cm in diametro, intus vacuo, parte inferiore lamellis radialibus prominentibus lignosis vel sulcis angustis altisque ornati; semina non vidi.

DARIEN: vic of Campamento Buena Vista, Río Chucunaque above confluence with Río Tuquesa, Stern *et al.* 876 (MO, holotype)

The six fruits of *L. elata* available for study (Fig. 6A) are considerably smaller than are those of *L. tuyrana* Pittier (Fig. 6D) as well as being smoother and less contracted in the zone below the calycine ring. The shelf-like ring is not erose and the supracalycine zone is usually more concave than in Pittier's species. In addition the operculum is much more tumorous on the outer surface with a strikingly prominent umbo, hollow within and in general suggesting a thimble, and an

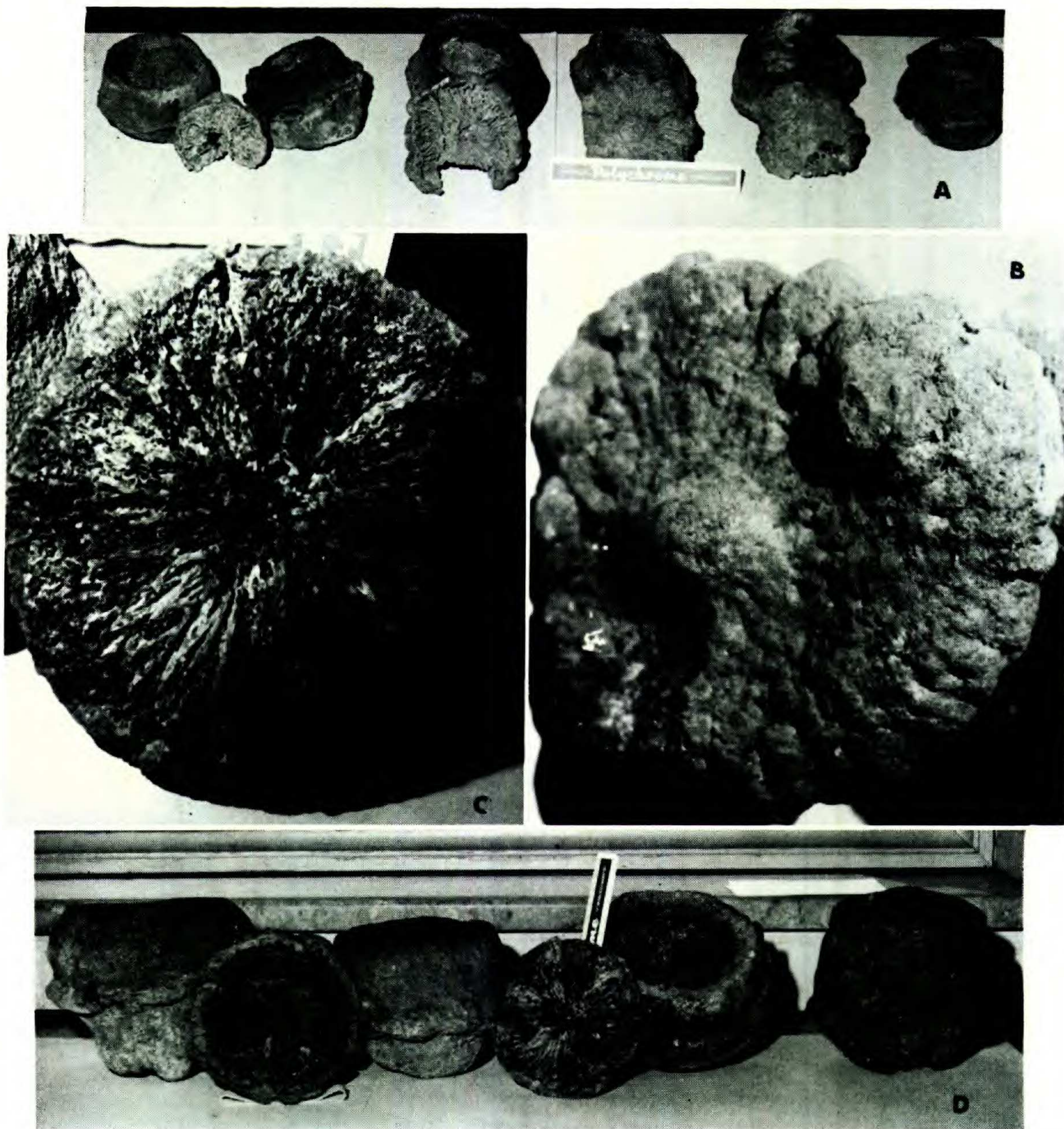


Fig. 6. *Lecythis elata* (holotype). A. fruits with several opercula, $\times\frac{1}{8}$; B. operculum of fruit, upper surface, $\times\frac{3}{4}$. *Lecythis tuyrana*. C. operculum of fruit, lower side, ca $\times\frac{1}{2}$; D. fruits with several opercula, $\times\frac{1}{8}$.

edge which is markedly concave. *L. tuyrana* has a much flatter and smoother operculum with its edge fitting flush against the rim of the pyx. A glance at Mier's plate (loc. cit., pl. 43) is sufficient to show that the pyx of *L. ampla* Miers, known from the Province of San Blas, Panama (and from Colombia), is much larger than that of *L. elata* and *L. tuyrana*.

3. *Lecythis ampla* Miers, Trans. Linn. Soc. **30**: 204, pl. 43, figs. 1-2. 1874; Woodson in Woodson & Schery, Ann. Missouri Bot. Gard. **45**: 128. 1958.

DARIEN: Punta Guayabo Chiquita, 14 mi N of Colombia, Stern & Chambers 163.

This sterile collection is supported by a wood sample (Yale Wood no. 51655). Two common names are listed on the label "coco" and "salerc."

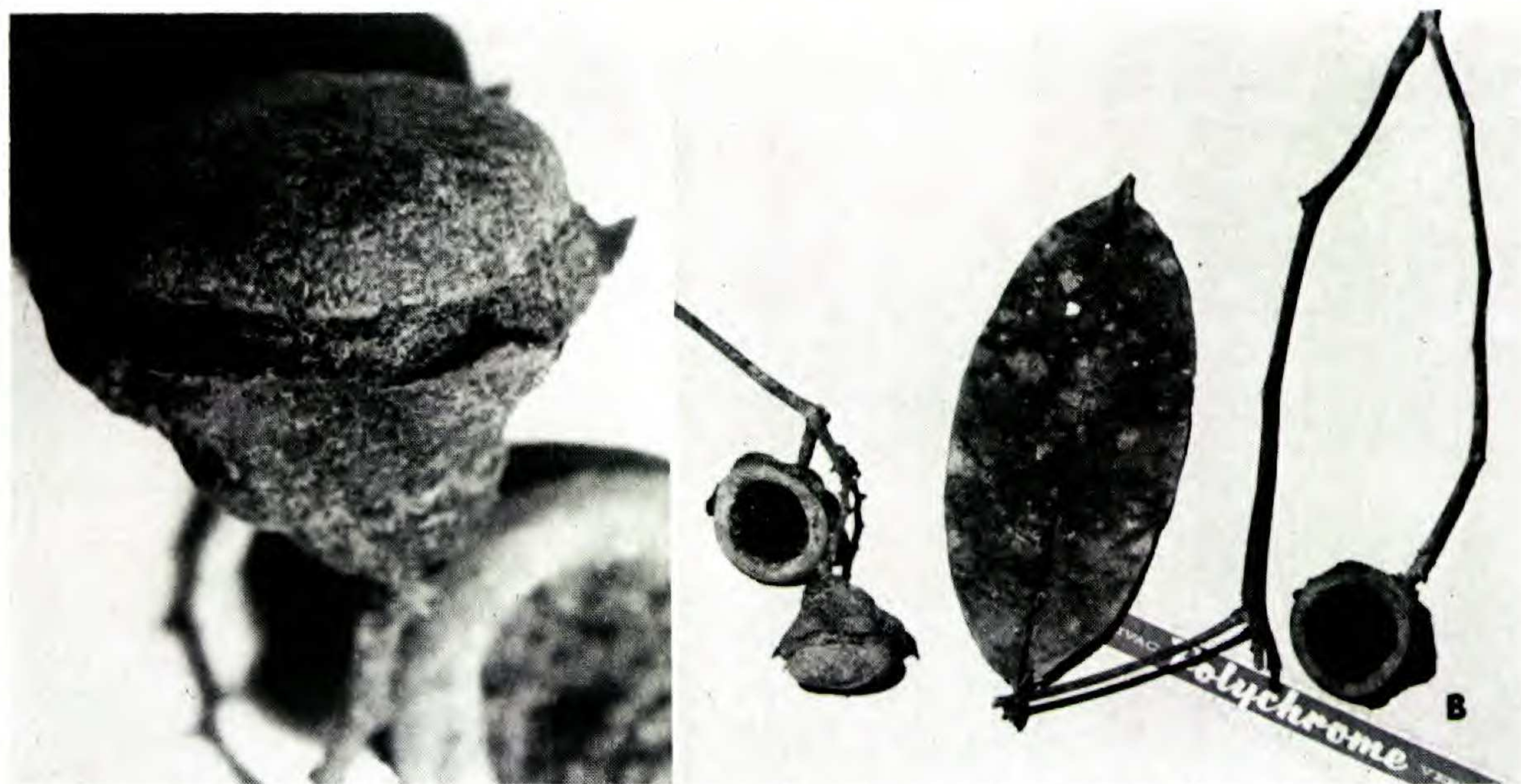


Fig. 7. *Eschweilera pittieri*. A. foliage and fruit, ca $\times 1$; B. fruit, lateral view showing operculum and calycine ring, ca $\times 1/4$. From Duke 5222.

5. ESCHWEILERA Mart.

1. *Eschweilera panamensis* Pittier, Contr. U.S. Nat. Herb. **26**: 12. 1927; Woodson in Woodson & Schery, Ann. Missouri Bot. Gard. **45**: 130. 1958.

DARIEN: Río Chico, nr Boca de Tesca, Duke 5222.

This is the second collection of the species, the type (*Pittier* 4394) having been collected on the Atlantic slope at Puerto Obaldia, Prov San Blas.

2. *Eschweilera pittieri* Kunth in Engl., Pflanzenreich **IV** 219 2 (Heft 105): 93. 1939. Woodson in Woodson & Schery, Ann. Missouri Bot. Gard. **45**: 131, fig. 41. 1958—Fig. 7.

DARIEN: Río Tucuti, Tucuti, Duke 5254; Ensenada Guayabo, between Punta Guayabo Grande & Punta Guayabo Chiquita, Stern & Chambers 176.

The fruit of the Duke collection is a perfect match for the one sketched in Woodson's paper (loc. cit., p. 132, fig. 41). The Stern & Chamber's collection has much larger flowers than Woodson noted for the species, measuring up to 7 cm in diameter. Stern & Chambers note that their collection is from a tree 17 inches in diameter with creamy yellow flowers; two common names "huasca" and "tuave" are listed; a wood sample was taken (Yale Wood no. 51667).

3. *Eschweilera calyculata* Pittier, Contr. U.S. Nat. Herb. **12**: 97, pls. 1-2. 1908; Woodson in Woodson & Schery, Ann. Missouri Bot. Gard. **45**: 133. 1958.

CANAL ZONE: Galena Point, Dwyer & Robyns 158.

Unfortunately there was no fruit on the tree which we collected in April, 1965. The tree, about 35 feet high, had striking cream-orange buds.

4. *Eschweilera woodsoniana* Dwyer, sp. nov.—Fig. 8.

Arbores parvae (?) ramulis teretibus laevibus glabris; folia 1-2 cm distantia, laminis oblongis, 8-10.5 cm longis, 4-5 cm latis, abrupte breviacuminatis basi ob-

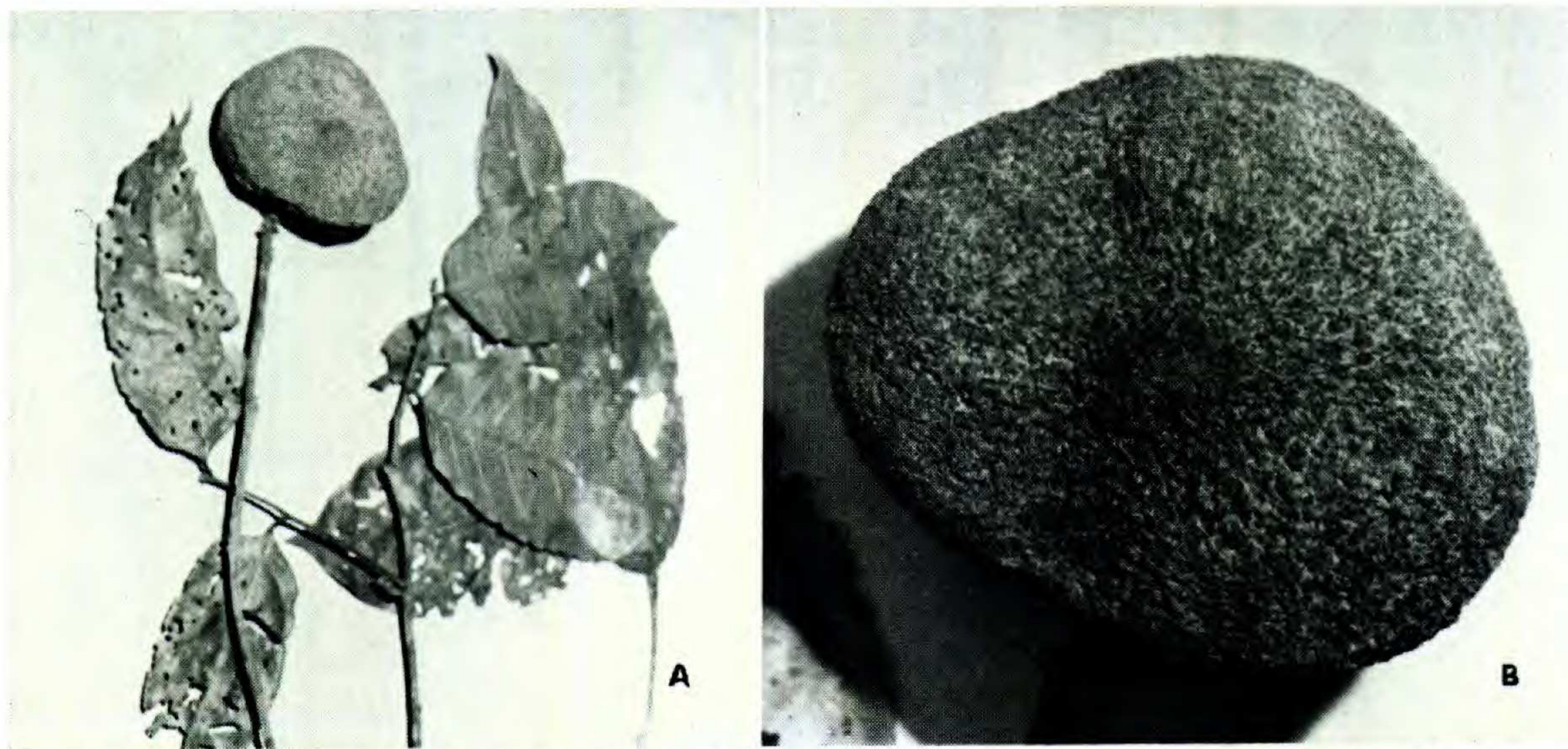


Fig. 8. *Eschweilera woodsoniana* (holotype). A. foliage and fruit, $\times 1/4$; B. fruits, opercular view, $\times 1$.

tusis, costa supra prominula infra vix prominente venis secundariis ± 10 prominulis arcuatis supra evanescentibus prominulis infra prominulis eis mediis 1-1.5 cm distantibus venis intermediis sub amplificatore reticulatis, lamina nitida glabra subcoriacea, petiolis teretibus coriaceis, ad 6 mm longis, ad 1.5 mm latis, glabris; flores non visi; fructus biloculati depresso-globosi, ad 2.5 cm longi, ad 5.5 cm lati, annulo calycino circ 5 mm ab basi fortiter contracto convexoque cincti, lobis annuli calycini sexibus vix ad 1 mm prominentibus, zona supracalycina 1-1.5 cm longa, operculo vix convexo umbone vix prominente ad 2 mm alto, 0.4-2 cm in diametro, margine acuto strato exteriori marginis saepe paullum retracto ad 0.8 cm et undulato, exocarpio in sicco brunneo minute ruguloso vix asperoque, endocarpio laeve tenui nitido brunneo, septo chartaceo angusto eccentrico, seminibus 6, subtriangularibus vel hemisphericis, ad 2.5 cm longis, 1.4-2.0 cm latis, ad 0.8 cm altis, arillo laeve tenui dimidium oblecto, endocarpio prominulis radialibus interseminalibus lineis ornato.

DARIEN: wooded ridge S of El Real, *Duke 5062* (MO, holotype).

The new species, named in honor of Dr. Robert E. Woodson, is readily distinguished from the other Panamanian species by possessing a pyx which is more than twice as broad as long and is sessile with the pedicel attachment obviously eccentric.

5. *Eschweilera* sp.

The following collection (*Duke 6124*) has only flowers. The description of these is as follows: sepala sexa oblonga circ 3 mm longa, 2-3 mm lata, carnosa fortasse glabra; petala sexa libera praeter basim aliqua staminifera basi, oblonga, 1.5-2 cm longa, 1.3-1.6 mm lata; androphorum involuto-cucullatum parte proximale multis fertilibus staminibus oblecta, antheris sessilibus bis plus longitudine filamentis apice dilatis; ovarium biloculatum stigmatibus solitariis circ 3 mm longis, 1.3 mm latis, glabris.

DARIEN: locality unknown, *Duke 6124*.